

### **REMARKS**

This Amendment is responsive to the Office Action mailed on July 5, 2005. Claims 8, 10, 12-14, 18, and 19 are amended. Claim 7 is cancelled. Claims 1-6 and 8-38 are pending.

Claims 27-38 are allowed. The Examiner has indicated that claims 2 and 8-19 contain allowable subject matter.

Claim 7 is rejected on the grounds of statutory double patenting under 35 U.S.C. § 101, as claiming the same invention as that of claim 1 of U.S. patent no. 6,683,958. Claim 7 is cancelled in order to overcome the double patenting rejection. Withdrawal of the double patenting rejection under 35 U.S.C. § 101 is respectfully requested.

Claims 1, 3-6, and 20-26 are rejected under 35 U.S.C. §102(e) as being anticipated by Leighton (US 5,949,885).

Applicant respectfully traverses these rejections in view of the amended claims and the following comments.

#### **Discussion of Amended Claims**

Claims 8, 10, 12-14, 18, and 19 are each amended into independent form by the inclusion of the subject matter of claim 7. Claim 7 is cancelled.

The Examiner has indicated that claims 8-19 contain allowable subject matter. Accordingly, Applicants submit that amended claims 8-19 are in condition for immediate allowance.

#### **Discussion of Leighton**

The Examiner has rejected claims 1, 3-6, and 20-26 as being anticipated by Leighton. This rejection is respectfully traversed. An anticipation rejection requires that each and every element of the claimed invention as set forth in the claim be provided in the cited reference. See *Akamai Technologies Inc. v. Cable & Wireless Internet Services Inc.*, 68 USPQ2d 1186 (CA FC 2003),

and cases cited therein. As discussed in detail below, Leighton does not meet the requirements for an anticipation rejection.

Leighton, as best understood, describes a watermarking system that is designed to withstand collusion attacks. Leighton's system is designed to thwart an attacker's attempts to combine several watermarked copies of the same content to produce a single copy of the content without any watermarks. This, according to Leighton, is accomplished by embedding each individual copy (or set of copies) of the content by a watermark that is modified (offset) relative to a baseline watermark:

"A watermarking procedure wherein each of a set of copies of the work has a slightly-modified form of a "baseline" watermark that is placed within a critical region of the data. . . . If multiple persons collude to attempt to create an "illicit" copy of the work (i.e., a copy without a watermark), however, at least one of the modified watermarks is present in the copy, thereby identifying both the illicit copy and the copier." (Leighton, Abstract)

Leighton describes embedding each copy of the content with watermarks that are "offset" from watermarks in other copies of the content:

"This baseline watermark is then processed to create a set of one or more "modified" watermarks, each of which is related to the baseline watermark in a predetermined manner. Preferably, the "offsets" needed to create the modified watermarks are not fixed, however, but are "randomized."" (Leighton, Col. 3, lines 20-25).

The embedded watermarks in a single host content, according to Leighton, do not comprise signal components having varying amounts of delay or offset, as is claimed by Applicants in claim 1.

The sections of Leighton relied by the examiner as the basis for rejecting claim 1 (Col. 3, lines 30-35 and 55-67) describe the detection of watermarks that are embedded using the above described collusion resistant technique. Leighton's detection technique does not involve detecting an auxiliary information carrier from said received encoded host signal, wherein the auxiliary information carrier is comprised of signal components having varying amounts of delay or offset from each other, as set forth in Applicants' claim 1. The signal components having varying

amounts of delay or offset set forth in Applicants' claim 1 are all signal components of the auxiliary information carrier (i.e., embedded watermarks) within a single host content signal, which is considerably different from the watermarks (and the detection technique) described by Leighton.

In other words, with Applicants' invention as set forth in claim 1, the host content contains an auxiliary information carrier which is comprised of a plurality of signal components which each have varying amounts of delay or offset from one another. In contrast, in Leighton, the watermark or embedded information in one copy of the content is offset from the watermarks in other copies of the content. Put simply, with Applicants' claimed invention, a plurality of signal components of the auxiliary information carrier within a single copy of a content are offset (or delayed) from one another, while in Leighton, each copy of a host content signal contains a single watermark which is offset from the respective watermarks of other copies of the host content signal.

Accordingly, Leighton does not disclose or remotely suggest that a single host content signal contains an auxiliary information carrier which is comprised of signal components having varying amounts of delay or offset from each other, as set forth in Applicants' claim 1.

In rejecting claim 20, the Examiner has relied on column 3, lines 1-10 and lines 17-55. The referenced sections of Leighton relied on by the Examiner describe a collusion resistant watermark embedding technique that embeds watermarks into different copies of the host signal with different "offsets". Leighton does not describe providing an information carrier signal comprising one or more features of said host signal, as stated in the claimed invention and described in various sections of the detailed specification.

For example, Applicants' specification indicates that: "the present invention provides for the encoding or embedding of a data signal in an analog host or cover signal, by modulating the host or cover signal so as to modify a distributed feature of the signal within the predefined region." (Applicants' Specification, page 7, first para.). The specification of the present invention further provides specific examples, in sections titled "First Example" and "Second Example", of

how such an information carrier having features of the host signal may be generated (see, e.g., Applicants' specification, pages 30-35).

Leighton on the other hand, is silent on how (and if) an information carrier signal is generated. Further, Leighton does not disclose or remotely suggest an information carrier signal comprising one or more features of the host signal. The only reference in Leighton's specification that describes the generation of watermarks may be found at:

"Generation of the baseline watermark can be achieved in many ways, e.g., by digitizing some portion of the document and using the resulting data or some subset thereof. (Whatever method is used is also used in the verification process, as discussed below)" (Leighton, Col. 3, lines 40-44).

In contrast to Leighton, with Applicant's invention according to claim 20, an information carrier signal comprising one or more features of the host signal is provided. A value of an auxiliary information signal representing an information symbol is determined. One or more values are then calculated for use in modifying the information carrier signal in accordance with the auxiliary information symbol. A host modifying signal can then be developed based on the calculated values for use in modifying the host signal. Leighton simply does not disclose or remotely suggest the steps set forth in Applicants' claim 20.

The Examiner also rejects claim 21 based on Column 3, line 56 through Column 4, line 4 of Leighton.

As discussed above, Leighton describe a collusion resistant watermark embedding technique that embeds watermarks into different copies of the host signal with different "offsets" for each copy of the signal. In Leighton, watermarks with different offsets are embedded into different copies of the host signal. Leighton does not describe embedding watermarks by providing an information carrier signal comprising one or more features of the host signal, wherein said features of the host signal comprise at least one of filtered, masked, or shifted versions of the host signal, as set forth in Applicants' claim 21.

In addition, Applicant respectfully points out that the portion of Leighton relied on by the Examiner refers to a decoding process for retrieving the watermarks, and not an encoding or watermark embedding process.

Similarly, Leighton does not disclose or remotely suggest the features of Applicants' claims 22-25.

For example, the Examiner's rejection of claim 25 is based on the disclosure at Column 3, lines 50-55 of Leighton. The referenced portion of Leighton indicates: "the watermark vector is then added at step 20 to the string  $x_1, x_2, \dots, x_n$ , and the result reinserted at step 22 into the original data to be protected." (Col. 3, lines 50-54). This section of Leighton at best describes merely adding the offset watermark vector to the baseline watermark in order to generate a modified watermark that is subsequently inserted into the host signal. Leighton does not describe modulating at least one of the amplitude or phase of the host signal, as stated in Applicants' claim 25.

Leighton does not disclose or suggest the subject matter of Applicants' claim 26, which specifies that the modifying step is carried out in the analog domain. In contrast to Applicants' claim 26, there are specific references in the portions of Leighton relied on by the Examiner which refer to converting the host signal into a digital format and carrying out the embedding of watermarks in digital domain:

"Referring now to FIG. 1, the work, in whatever form, is digitized at step 10 into a data file or string of data either as part of the inventive technique or through some known A/D preprocessing ... The watermark vector is then added at step 20 to the string  $x_1, x_2, \dots, x_n$ , and the result reinserted at step 22 into the original data to be protected. The work may then be converted back to its original form (image, video, audio, etc.) at step 24." (Col. 3, lines 14-55).

As Leighton does not disclose each and every element of the invention as claimed, the rejections under 35 U.S.C. § 102(e) are believed to be improper, and withdrawal of the rejections is respectfully requested. See, *Akamai Technologies Inc., supra*.

In view of the above, Applicants respectfully submit that the present invention would not have been obvious to one skilled in the art in view of Leighton, taken alone or in combination with any of the other prior art of record.

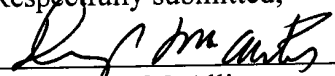
Further remarks regarding the asserted relationship between Applicants' claims and the prior art are not deemed necessary, in view of the amended claims and the foregoing discussion. Applicants' silence as to any of the Examiner's comments is not indicative of an acquiescence to the stated grounds of rejection.

Withdrawal of the rejections under 35 U.S.C. § 101 and 35 U.S.C. § 102(e) is therefore respectfully requested.

#### Conclusion

The Examiner is respectfully requested to reconsider this application, allow each of the pending claims and to pass this application on to an early issue. If there are any remaining issues that need to be addressed in order to place this application into condition for allowance, the Examiner is requested to telephone Applicant's undersigned attorney.

Respectfully submitted,



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